ORGANIZATIONAL PERFORMANCE MEASUREMENT IN THE ENERGY INFORMATION ADMINISTRATION

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ABSTRACT: A well-defined system of organizational performance measures can be a powerful means for prioritizing organizational goals and achieving them. The Federal Government is moving toward the use of organizational performance measurement in response to a number of Federal initiatives including the National Performance Review, Executive orders, Office of Management and Budget (OMB) Circular A-11, the Chief Financial Officers (CFO) Act of 1990, the Government Management Reform Act of 1994, and the Government Performance and Results Act (GPRA) of 1993.

If Federal Agencies work to accomplish the intent of the GPRA, the other requirements will be satisfied. The primary intent of GPRA is to move the Government toward "management for results", including the use of Strategic Plans, annual performance plans (with measures which will demonstrate achievement of those plans), and use of the plans as part of the budget process.

The Energy Information Administration (EIA) was one of the pilot projects under the GPRA. This paper presents the methodology used by EIA to develop a performance measurement system, the results of applying the methodology, the measures we identified, and our progress in collecting and presenting the information. It also presents lessons learned in the hope that our experience will help other agencies move forward.

KEYWORDS: Performance measurement, efficiency, effectiveness, productivity, outcomes, performance based management

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Background

A well-defined system of organizational performance measures can be a powerful means for prioritizing organizational goals and achieving them. The Federal Government is moving toward the use of organizational performance measurement in response to a number of Federal initiatives including the National Performance Review, Executive orders, Office of Management and Budget (OMB) Circular A-11, the Chief Financial Officers (CFO) Act of 1990, the Government Management Reform Act of 1994, and the Government Performance and Results Act (GPRA) of 1993.

It has been observed[1] that if Federal Agencies work to accomplish the intent of the GPRA, the other requirements will be satisfied. The primary intent of GPRA is to move the Government toward "management for results". The GPRA requires that Federal Agencies have Strategic plans by 1998; use annual performance plans by 1999; use the performance plans as part of the President's budget in 1999; and report results annually beginning in 2000. GPRA also required that pilot projects be established between 1994 and 1996.

The Energy Information Administration (EIA) decided to participate as a pilot project and the Performance Measurement Committee started meeting in late 1993. This Committee focused on customer surveys. It was championed by EIA's Deputy Administrator, as were later performance measurement teams. The Performance Measurement Development Team started work in September 1994[2] The Performance Measurement Implementation Team[3] started in April, 1995 and will delivered the 1995 Performance Measures Report to EIA's strategic planners in April 1996. One of the noteworthy things about EIA's approach is that it is being done entirely by staff.

This paper presents the methodology used, the results of applying the methodology, the measures we identified, and our progress in collecting and presenting the information. It also presents lessons

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[1] "Implementation of the Government Performance and Results Act (GPRA), a Report on the Chief Financial Officer's Role and Other Issues Critical to the Success of GPRA", Chief Financial Officers Council, GPRA Implementation Committee, May 1995.

[2] Members of the Performance Measurement Development Team: Nancy Kirkendall, Paul Staller, Colleen Blessing, Ken Brown, Lynda Carlson, Linda Doman, Karen Elwell, Theresa Hallquist, Ron Hankey, Tom Murphy, Roger Saquety, Elizabeth Scott, George Wakefield, John Weiner.

[3] Members of the Performance Measurement Implementation Team: Nancy Kirkendall, Alan Beamon, Colleen Blessing, Lynda Carlson, Kathy Cavanaugh, Lou DeMouy, Theresa Hallquist, Vicky McLaine, Tom Murphy, Elizabeth Scott, Velu Senthill, Paul Staller, Alan Swenson, Jim Todaro, John Weiner, Dan Woomer.

learned in the hope that our experience will help other agencies move forward.

Steps in Developing Organizational Performance Measures

The process of developing a set of organizational performance measures can be described as a five step process (not of equal difficulty). They are:

1. Start the team.
2. Describe your organization.
3. Determine needed measures.
4. Collect the data.
5. Use the data.

In the sections below, the steps will be explained in more detail and illustrated with EIA's experience.

Step 1: Start the Team

In March 1994, two members of EIA's Performance Measurement Committee started attending the Study Group on Organizational Performance Measurement sponsored by the Virginia Chapter of the American Society for Quality Control. In July, the study group heard a presentation by Lt. Gene Lorenzo and Capt. Frank Alt of the U.S. Coast Guard. They described how they were implementing a system of performance measurement in their part of the Coast Guard. They were using the same reference text the study group was using[4].

Based on the Coast Guard example, we concluded that EIA could use a similar process. We proposed to the Performance Measurement Committee that we lead a team of EIA staff in the development of performance measures for EIA using the Sink and Tuttle methodology. The Committee agreed.

Lorenzo and Alt used the following quote, which is one of the common themes in the literature describing the development of performance measures.

> "Measures are best developed collaboratively with those involved in and responsible for what is measured."

We put out a call for volunteers on the ccmail bulletin board. In addition, the formation of the Performance Measurement Development Team was announced at a meeting of EIA's Quality Council. Most of the team of 14 were volunteers, ranging in grade from a GS-9 to an SES. The team had at least one representative from each major office. The team had its first meeting in September 1994.

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[4] D. Scott Sink and Thomas C. Tuttle, *Planning and Measurement in Your Organization of the Future*, Industrial Engineering and Management Press, Institute of Industrial Engineers, Norcross, Georgia, 1989.

Step 2: Describe Your Organization.

Sink and Tuttle (1989) describe the development of a work process model (or input/output chart) as part of Strategic Planning, and their definitions of measures are based on the input/output chart. In the Spring of 1994, the EIA Senior Staff had developed their first Strategic Plan, but they did not develop an input/output chart.

Thus, the Team's first task was to develop an input/output chart for EIA. It was an excellent way for the group to come to a common understanding about our organization. A schematic of an input/output chart appears as Figure 1. The input/output chart identifies the core business processes of an organization. Given those processes, it also identifies the inputs to the process, and the outputs (products and services) from the process. It identifies "suppliers" of the inputs, and users of the outputs, or "customers". It also identifies the "outcomes", what happens when the customer receives the output.

The EIA team had the following observations.

. Identify the core business processes first. How does your organization turn inputs into outputs? Keep it simple. You most likely only have 3 to 5 "transformational processes" and 1 to 3 "support processes".

. Some of your processes may have intermediate outputs that also serve as inputs to one of your other core business processes.

EIA's current input/output chart appears as Figure 2. We completed a draft of the input/output chart by the end of September, 1994, and held two rounds of open meetings for EIA staff to ask questions about it. We incorporated suggestions, and also developed another schematic (Figure 3) to illustrate the interrelationships between the inputs and outputs of our core business processes. The input/output chart was essentially complete in November 1994 and was displayed at several locations around EIA.

Step 3. Determine needed measures

Performance measures are intended to be used in the Strategic Planning Process. Measures should inform planners as to problems that require attention, and should allow planners to monitor progress toward goals. Figure 4 shows the information flow (counter-clockwise) we are ultimately striving for. The organization is shown on the bottom. Once we have accomplished our mission to develop a set of organizational performance measures, they will be routinely captured and maintained in a data base (right hand box). Before any major planning exercise, the performance measures will be reviewed, analyzed, graphed and widely distributed (top box). The Strategic Planners will make use of the information (left hand box), deciding on new objectives as input for the Organization (bottom).

To start this process, the Team needs first to become familiar with the Strategic Plan, and with any other external requirements for performance measurement. In EIA we also found it useful to review the definitions of measures as they relate to the input/output chart. The definitions below also come

from Sink and Tuttle (1989). These relate nicely to the input/output flow diagram as shown in Figure 5.

a. Efficiency: an input measure. Frequently the ratio of the expected input to the actual input.

b. Effectiveness: an output measure. Frequently the ratio of the expected output to the actual output.

c. Productivity: the ratio of output to input. Note that to be meaningful, the inputs and outputs used to define the ratio should reflect the same core business process.[5]

d. Quality: Quality can have many different types of measures, and can also be measured at any point in the input/output chart. It can include actual versus expected, accuracy, timeliness, etc.

e. Innovation: Measures the organization's success in creating change. The greatest achievements in productivity are gained by innovation. Frequently progress is achieved by many innovations, each of which is small.

f. Quality of worklife: Employee attitudes.

g. Profitability/budgetability: An outcome to input ratio.

The process of identifying needed measures is accomplished by using a consensus building technique such as brainstorming or the nominal group technique. A question such as "What measures will show that we are ... (list one of the goals from your strategic plan)" EIA's strategic plan appears as Figure 6. Thus one of the questions we used was "What measures will show that we provide our customers with fast and easy access to public energy information?"

After the question is asked, the group has 10 minutes to sit quietly, each person thinking up answers to the question. Then each person is invited to provide one of his/her measures, which is added to a list. This continues until all of the measures of each team member have been included. After a period of discussion, team members are asked to select the 3 (or some other number) measures they think best and rank them. They assign the highest priority measure a score of 3, second priority a score of 2, and their third priority a score of 1. All members vote, the scores received by each proposed measure are summed, and the measures are arranged in decreasing order by total number of votes received. The result is a list of measures in priority order. The highest priority measures are moved to a master list.

This process is carried out for each of the strategic goals. Additional questions, which may lead to

[5] In EIA our input/output chart identified core business processes which were not related to our formal organizational chart. As a result, our accounting system did not provide the information we needed concerning the resources used by the core business processes.

different, but useful measures are:

"What measures will show that we are doing the right things?"

"What measures will show that we are doing things right?"

Once the master list containing the highest priority measures from each question is complete, it must be unduplicated and discussed. This provides an initial list of performance measures.

This list of measures is compared to the input/output chart to assure that important inputs, outputs, outcomes and quality are included. It is compared to the Strategic Plan to assure that there are measures for each goal.

Within EIA, this process led to a list of 11 measurement categories[6].

Inputs

1. Resources Used

Internal Process

2. Innovations
3. Teambuilding
4. Employee Attitudes

Outputs

5. Counts of EIA Products and Customers
6. Revised Product Slate
7. Quality (timeliness and revision error)

Outcomes

8. Customer Satisfaction
9. Customer Suggestions
10. Customer compliments or complaints
11. Citations in the media

Additionally we decided that two sub-processes were very important to monitor: training, and work for others.

A number of sources claim that an organization should have a family of 4 to 6 balanced measures. One such "family of measures" includes at least one each from the following four categories[7].

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[6] They are called categories here because each may result (or be used in) in multiple measures.

[7] Carl Thor, *The Measures of Success, Creating a High Performing Organization,* Oliver Wright Publications, Inc., 1994.

1. Productivity
2. Quality
3. Customer satisfaction
4. Other issues
    -- safety
    -- innovation
    -- employee attitudes

The Team selected the following "Five for '95" to focus on for the first year.

1. Productivity (ratio involving resources used and counts of products or customers).
2. Timeliness and Revision Error
3. Customer satisfaction
4. Innovations
5. Employee attitudes

The input/output chart and the measurement categories were presented to EIA's Quality Council in March 1995.

Step 4: Collect the data

The team must decide what can be counted, what scale will be used, and how it will be recorded. They must decide/determine how to store and retrieve data effectively and efficiently; how to process, and transform data and turn them into "measures". They must determine how to best display the information. After making these decisions, they must do all these things. Finally, they must analyze the results and publicize them. Step 4 is the most difficult and time-consuming.

The Performance Measurement Implementation Team started working in April, 1995 and came up with a set of proposals for collecting information. In September we held a meeting to consult with EIA branch chiefs. Their ideas were incorporated, and the team started collecting data.
In the rest of this section I will summarize our progress toward collecting information.

Productivity Productivity is an extremely important measure which involves a ratio of inputs to outputs for a core process. While EIA has information on counts of products, we had a problem with inputs. The difficulty was apparent almost as soon as our input/output chart was complete. EIA's accounting systems do not capture inputs (FTE or contract dollars) separately for our core business processes. This was one main reason why EIA undertook Activity Based Costing.

ABC is a cross functional team approach. The team first defines an "activity dictionary". In EIA they started from the core business processes in our input/output chart and broke them down into subprocesses and activities. The activity dictionary was widely reviewed within EIA and revised. Ultimately, all EIA staff and contractors were asked to allocate their working time in FY 1995 in 1 percent increments to the activities listed in the dictionary.

This will provide the input information we need for 1995. In addition, we hope to make use of the

information to redesign our accounting systems so that we will also have it in the future.

Timeliness and Accuracy For data products timeliness and accuracy have broad buy-in by EIA staff as measures that reflect EIA's mission. For forecasting and analysis products, we do not have agreement concerning useful measures of timeliness and accuracy. This will be a focus in 1996.

We measured timeliness of our survey/publications to be the number of days between the last day of the reference period and the "released for printing date" shown inside the front cover of the publication. We have compiled results for most of our survey/publication combinations. Figure 7 displays the timeliness of our annual data publications.

Figure 7 indicates that we should be able to make some gains in getting our publications out in a more timely fashion. If managers and staff make use of timeliness graphics such as this one, and make the natural cross-office comparisons, our publications will become more timely.

One of the ways EIA has tried to "get out there" more quickly has been via our electronic products. The team was not successful in obtaining the "date" associated with release of electronic products. In 1996 we will take further steps to capture this information.

We defined revision error to be the difference between the first published value of a number and the last published value of a number. For each survey, we asked for the percent revision error for the five major data items, as selected by the program office. While this measure will be important to monitor as we work to improve timeliness, we have one challenge: this approach provides no measure of revision error for data that are published only once. This situation may become more common in light of budget constraints which may eliminate publications. We may recommend that the final value for a data item should be based on master files which incorporate changes.

Another measure of accuracy is the percent relative standard error, or sampling error. Since neither revision error nor sampling error is a complete picture of survey accuracy, we are considering a more complete definition, which may include peer review.

Customer Satisfaction. EIA's Customer Survey Committee continued the work which was started by the original Performance Measurement Committee. We just completed our second EIA-wide survey of telephone customers. For customer service, we ask for satisfaction on a five point Leichart scale for a) ease of contact, b) courtesy, c) familiar with information requested, d) understood needs, and d) promptness. EIA typically receives very high marks on these attributes, as shown in Figure 8.

For those telephone customers who were also users of our information products, we asked for satisfaction on the same five point scale for a) relevance, b) accuracy, c) timeliness, d) comprehensive, and e) ease of access. Here we received high scores on most items. The lowest score was on timeliness, with 72 percent satisfied or very satisfied, see Figure 9. This indicated to us that working on timeliness may provide gains in customer satisfaction. However, we also need to work with the customers to find out which products need to be more timely.

Another initiative within EIA that will help us to make more targeted use of customer surveys is the

development of the EIA Customer Data Base by the Customer Data Base Committee. The prototype of this data base has just become operational. The data base is designed to be a record of all of EIA's customers, including telephone customers. Thus, it will serve as a sampling frame for customer surveys, and will also provide information concerning the demographics of our customers and the products they use. Currently EIA has limited information about our customers.

Innovations Originally we wanted to measure the "savings" due to innovation. We proposed to ask for proof that there was a savings of time or money, or some other tangible benefit for each innovation. However, staff felt that this would be too burdensome, and that the impact of innovation would show up in other measures.

As a result, we are celebrating innovation, as a way to encourage innovative activities. Figure 10 displays some of EIA's major innovations in 1995. Included are an innovations award given by one EIA Office (silver scissors award), business reengineering, the move of part of EIA to a building closer to the rest of EIA, establishment of an EIA homepage, the release of EIA data on the internet and on CD ROM, and upgrades to EIA's LAN.

While this is not a legitimate "measure", it still encourages innovative behavior and gives staff something to celebrate. These are positive outcomes, particularly in light of the current pressures on the Federal system.

Employee attitudes EIA has engaged the services of a contractor to provide employee attitude information for the past two years. The contractor has been administering employee attitude surveys for many years and has a large database of results. Thus, they provide an instant baseline (comparison to the average company in the data base), and an instant benchmark (comparison to the top companies in the data base.) EIA's first employee survey was conducted in July, 1994. Its second was conducted in November 1995.

In 1994 the EIA Quality Council used the survey results and targeted 3 low scoring areas for improvement. They were, quality awards and recognition, job significance, and communication. In each case a process improvement team worked to come up with solutions. The Performance Measurement Implementation Team chose to monitor four questions related to these low scoring areas and, in addition, to monitor two general questions reflecting overall employee state of mind. These are "job satisfaction" and "satisfaction with the ability to serve the customer".

Figure 11 displays the employee attitude results. It shows the four questions most closely related to the areas targeted for improvement on the right, and the general questions on the left. The little stars on the graph are the benchmarks. The little boxes are the baselines. The height of the bars show EIA's performance in the two years. This graphic shows how much more interesting information is when it is nicely displayed.

Other Measures

Citations in the Media (Figure 12) is an "outcome" measure. It reflects the extent to which our data and analysis are of general interest to a wide audience.

Step 5: Use the data

The Performance Measurement Implementation Team completed its 1995 performance measures report in April 1996 and delivered it to the strategic planners. They will use the information to evaluate the organization and set goals for the future -- and to provide information to the Performance Measurement Team for needed improvements in measures.

We have established a performance measures bulletin board which we use to disseminate information about measures. We also use displays in the hall outside the Administrator's office. These activities are intended to let employees see and understand the measures. We hope they will "buy into" them, support their collection, improve processes, and celebrate achievements.

Support for the Process

EIA has been able to make considerable progress toward the development of a performance measurement system in large part because of high level support for the project. The Secretary of Energy is very interested in performance measurement, and the Administrator of EIA was interested in organizational performance measurement even before he came to EIA. Both the Administrator and the Deputy Administrator are supportive and enthusiastic.

The members of the performance measurement teams have been invaluable in helping the agency to move towards performance based management. They are convinced that measuring performance is the right thing to do. Nothing would have happened without their dedication and hard work. Other EIA staff range from supportive, interested and possibly working on other related teams, to suspicious and distrusting. However, over time we see more and more people becoming interested in the performance measurement project.